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TITLE : SPUTTERING TARGET MATERIAL AND ITS PRODUCTION

ABSTRACT : PROBLEM TO BE SOLVED: To obtain a metallic target material minimal in the generation of particles etc., at the time of formation of a thin metallic film by means of sputtering, by applying plastic working to a metal stock and then carrying out, as heating treatment, rapid heating at a specific velocity up to the recrystallization temp.

SOLUTION: A billet or ingot of metal stock is cut into plate-like ingot of 20 to 200 mm thickness and subjected to plastic working at 50 to 90% draft. After plastic working, the plate-like ingot is subjected, as heating treatment, to rapid heating up to the recrystallization temp. at $\geq 100^{\circ}\text{C}/\text{min}$ average temp.- rise rate and aged for 10 sec to 10 min. It is preferable that rapid heating is performed by immersing, at a stretch, the plate-like ingot in a solder bath which is heated to the recrystallization temp. range and melted. The solder alloy layer adhering to the rear of the target material is used as a solder layer at the time of joining a backing plate. After the heating treatment and the aging, the target material is cooled rapidly by means by of water cooling etc. The average grain size of the crystalline grains in the sputtering target made of aluminum alloy is regulated to $\leq 30 \mu\text{m}$.

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